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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,067	02/17/2004	Tai-su Park	5649-1192	2258

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EXAMINER	
PRENTY, MARK V	

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 03/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/780,067	PARK ET AL.	
	Examiner	Art Unit	
	MARK PRENTY	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-18,20 and 31-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *31-48* is/are allowed.

6)☒ Claim(s) *1,2,9,10,12,13,15 and 20* is/are rejected.

7)☒ Claim(s) *3-5,7,8,11,14 and 16-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 February 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

This Office Action is in response to the amendment filed on December 20, 2005.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the recited source/drain region junction(s) (with the insulating layer(s) and gate electrode extending beyond) must be shown or the feature canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 1 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent 6,998,676 to Kondo et al. (Kondo). Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

As to independent claim 1, Kondo discloses a transistor (see the entire patent, particularly the Fig. 1 disclosure) comprising: a vertical channel protruding from a substrate 11 including a source/drain region junction between the vertical channel and the substrate (see source region S and/or drain region D); an insulating layer G_{ox} extending on a side wall of the vertical channel toward the substrate to beyond the source/drain region junction; and a gate electrode G extending on the side wall toward the substrate to beyond the source/drain region junction.

Claim 1 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Kondo.

As to dependent claim 9, Kondo's transistor further comprises a mask insulating layer 10 extending on a top surface of the channel.

Claim 9 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Kondo.

Claims 1, 2, 9, 10 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent 6,885,055 to Lee.

As to independent claim 1, Lee discloses a transistor (see the entire patent, including the Fig. 4a disclosure, for example) comprising: a vertical channel protruding from a substrate 2a including a source/drain region junction between the vertical channel and the substrate (see column 7, lines 4-10); an insulating layer 12 extending on a side wall of the vertical channel toward the substrate to beyond the source/drain

region junction; and a gate electrode 16 extending on the side wall toward the substrate to beyond the source/drain region junction.

Claim 1 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Lee.

As to dependent claim 2, Lee's insulating layer 12 further extends on a top surface of the channel (see Fig. 9d, for example).

Claim 2 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Lee.

As to dependent claim 9, Lee's transistor further comprises a mask insulating layer 6/14 extending on a top surface of the channel (see Fig. 10a, for example).

Claim 9 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Lee.

As to dependent claim 10, Lee's mask insulating layer 6/14 comprises an etch stop nitride layer 14 and a pad oxide layer 6 (see column 8, lines 61-67).

Claim 10 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Lee.

As to dependent claim 12, Lee's mask insulating layer 6/14 comprises alternating oxide 6 and nitride 14 layers (see column 8, lines 61-65).

Claim 12 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Lee.

Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent 6,525,403 to Inaba et al. (Inaba).

As to independent claim 1, Inaba discloses a transistor (see the entire patent, including the Figs. 15-17 disclosure, for example) comprising: a vertical channel 64a protruding from a substrate 61 including a source/drain region junction between the vertical channel and the substrate (see source region 67 and/or drain region 68); an insulating layer 65 extending on a side wall of the vertical channel toward the substrate

to beyond the source/drain region junction; and a gate electrode 66 extending on the side wall toward the substrate to beyond the source/drain region junction.

Claim 1 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Inaba.

As to dependent claim 2, Inaba's insulating layer 65 further extends on a top surface of the channel.

Claim 2 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Inaba.

Claims 1, 2, 13, 15 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent 6,242,783 to Ohmi et al. (Ohmi).

As to independent claim 1, Ohmi discloses a transistor (see the entire patent, including the Figs. 1A-1D disclosure, for example) comprising: a vertical channel protruding from a substrate 1 including a source/drain region junction between the vertical channel and the substrate (see source region 6 and/or drain region 7); an insulating layer 8 extending on a side wall 10 (or 12) of the vertical channel toward the substrate to beyond the source/drain region junction; and a gate electrode 5 extending on the side wall toward the substrate to beyond the source/drain region junction.

Claim 1 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Ohmi.

As to dependent claim 2, Ohmi's insulating layer 8 further extends on a top surface 11 of the channel.

Claim 2 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Ohmi.

As to independent claim 13, Ohmi discloses a transistor (see the entire patent, including the Figs. 1A-1D disclosure, for example) comprising: a plurality of vertical channels protruding from a substrate 1 including respective source/drain region

junctions between the plurality of vertical channels and the substrate (see source region 6 and/or drain region 7); a plurality of insulating layers 8 extending on respective side walls 10, 12 of the plurality of vertical channels toward the substrate to beyond the respective source/drain region junctions; and a gate electrode 5 extending on the respective side walls of the plurality of channels toward the substrate to beyond the respective source/drain region junctions.

Claim 13 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Ohmi.

As to dependent claim 15, Ohmi's plurality of insulating layers 8 further extends on respective top surfaces 11 of the plurality of channels.

Claim 15 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Ohmi.

As to dependent claim 20, Ohmi's plurality of channels are oriented in a parallel configuration.

Claim 20 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Ohmi.

Claims 3-5, 7, 8, 11, 14 and 16-18 are objected to as being dependent upon a rejected base claim, but would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 31-48 are allowable over the prior art of record.

Registered practitioners can telephone the examiner at (571) 272-1843. Any voicemail message left for the examiner must include the name and registration number of the registered practitioner calling, and the Application/Control (Serial) Number. Technology Center 2800's general telephone number is (571) 272-2800.

Mark Prenty

Mark V. Prenty
Primary Examiner